

# COMPUTER SYSTEM FOR MAINTAINING CURRENT AND PREDICTING FUTURE FOOD NEEDS

## TECHNICAL FIELD

This invention relates to computer systems, and specifically to computer systems which maintain a current inventory of prepared foods and predicts future needs of the prepared foods.

## BACKGROUND OF THE INVENTION

In today's restaurant industry an inventory of prepared food items is maintained in order to insure a desired quantity is readily available for immediate sale. It is typically the restaurant manager's responsibility to monitor the current inventory of prepared food items and instruct the cook to prepare additional food items to meet future needs. The quantity of food items maintained in inventory and the estimation of the quantity of food items to prepare in advance of the need is accomplished through the manager's knowledge of past sales, waste and outside influences, such as weather conditions. Thus, should the restaurant manager be poor at calculating future needs or become unavailable or otherwise occupied this disruption may cause too much food to be prepared and therefore wasted, or too little food to be prepared and therefore become unavailable to future customers.

Systems have been designed, such as that shown in U.S. Pat. No. 5,218,527, which instruct the cook when to commence the items of a selected order so that all the items are completed at approximately the same time. This system however does not maintain a current inventory but is responsive to a select order of a customer. Hence, this system merely times when each item of a group of items should be commenced.

Therefore, a need still remains for a system which can maintain a current inventory of food items without instruction from a manager. Accordingly, it is to the provision of such that the present invention is primarily directed.

## SUMMARY OF THE INVENTION

In a preferred form of the invention, a computer system is provided for determining and transmitting cooking commencement instruction for selected food items at time intervals to supply future needs of the selected food items. The computer system comprises a programmable memory, a cooking station monitor, a table of selected food items stored on the programmable memory, and a table of desired quantities of the selected food items at desired time intervals relating to the table of selected food items. The table of desired quantities at desired time intervals being stored on the programmable memory. The computer system also includes a table of cooking time to prepare intervals relating to the table of selected food items which is stored on the programmable memory, a variable quantity of processed selected food items stored on the programmable memory, clock means for establishing a current time, and control means for initiating a cooking instruction to the cooking station monitor in response to a selected relation between the current time and the table of desired quantities of the selected food items at desired time intervals and the table of cooking time to prepare intervals, and a selected relation between the variable quantity of selected food items and the table of desired quantities of selected food items at desired time intervals.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic view of the computer system in a preferred embodiment.

FIG. 2 is a block diagram showing the arrangement of a major portion of the computerized cash register shown in the computer system of FIG. 1.

FIG. 3 is a flow chart for explaining the specific operation of the prediction commencement time decision means of FIG. 2.

FIG. 4 is a sample of data entries for the computer portions shown in FIG. 2.

## DETAILED DESCRIPTION

Referring next to the drawings, there is schematically shown a computer system 10 for maintaining an inventory of food items through the prediction of future needs. The computer system 10 includes an electronic cash register 11, referred to as ECR hereinafter, which is electronically coupled to a cooking station monitor 12 and input 13, and a manager's station monitor 15, input 16, and printer 17. The computerized cash register 11 may be a Panasonic 7700 QUICK SERVICE SYSTEMS, made by Panasonic Information & Communications Company of Elgin, Ill., which includes a touchscreen workstation with a LCD touch panel and a programmable memory. Inputs 13 and 16 may be keyboards or touchscreen incorporated within the respective monitors.

FIG. 2 is a block diagram showing the arrangement of a major portion of the ECR 10. This includes a menu registration means 30 for registering therein the selected food items of a menu, slip issuance means 31 for issuing an order slip to a customer, a desired quantity at specific time registration means 32 for registering therein the desired quantity of a selected food item for a desired time period during the day, a special add-on quantity registration means 33 for registering therein a value for special food item quantity circumstances, total quantity desired decision means 34 for computing the desired quantity under special circumstances, total quantity desired registration means 36 for registering therein the total desired value therein, quantity on hand decision and registration means 37 for computing and registering therein the quantity of each food item on-hand, i.e. the quantity presently completely cooked, number of items to cook registration means 38 for registering therein the number of each food item to be cooked with each cooking instruction, number of items currently being processed decision and registration means 39 for registering therein the number of food items being processed, i.e. the quantity presently being cooked, wasted food items decision means 41 for computing the number of food items to be counted as waste, wasted food items registration means 42 for registering the value of wasted items from the wasted food items decision means 41, time to prepare registration means 43 for registering therein the time it takes to prepare each food item, i.e. the cooking time, prediction commencement time decision means 44 for computing the proper time to transmit a cooking instruction for each food item by subtracting the corresponding value of the time to prepare registration means 43 from the time value of the desired quantity at specific time registration means, prediction commencement time registration means 46 for registering therein the value of the prediction time commencement decision means 44, cooking instruction transmission means 47 for transmitting a cooking instruction to a cook station monitor 12, cooking initiated transmission means 48 for transmitting input of a commencement command from the

cooking station input 16, total processed quantity decision means 49 for computing the total quantity of food items on-hand and presently cooking, total processed quantity registration means 50 for registering therein the value of the total processed quantity value decision means 49, and cooking complete transmitting and registration means 51 for transmitting the completion signal from the cooking station input 13 and registering the complete cooking of a food item. FIG. 4 shows an example of table entries entered into the just described registration means. It should be understood that the term "table" may also include a single entry value and that the term "value" is not restricted to a single entry but may include a table of values.

The information saved within the menu registration means 30, desired quantity at specific time registration means 32, number of items to cook registration means 38, and the time to prepare registration means 43 is entered into the memory upon the initial operation of the system. However, these values may be updated should it be determined that these values are not accurate portrayals of daily activities. The information saved within the special add-on registration means 33 should be updated daily in order to reflect daily variances, such as weather conditions and daily specials on selected food items or special orders.

When menu food item, contained within the menu registration means 30, is requested by the customer the sales clerk enters the selected food item upon the ECR entry panel 21. The entry of the food items causes the quantity on hand decision and registration means 37 to subtract the number of ordered food items from the present value of the quantity on hand decision and registration means. This also causes the total processed quantity decision means 49 to subtract the ordered amount from the present value within the total processed quantity registration means 50, i.e. subtract ordered quantity from the aggregate of the quantity on hand and the quantity being processed. Upon the completion of the entire customer's order the ECR will generate a receipt through the slip issuance means 31.

Shown in FIG. 3 is a flow chart for explaining a portion of the specific operation of the prediction commencement time decision means 44. The current time is continuously maintained by the ECR. The current time is correlated to the closest time less than the current time within the desired quantity at a specific time registration means 32. The total processed quantity value determined by the total processed quantity decision means 49 and stored within the total processed quantity registration means 50 is compared to the total quantity desired value stored within the total quantity desired registration means 36 which relates to the associated time within the desired quantity at specific time registration means. Should the total processed quantity value be equal to or greater than the total quantity desired value the system will not initiate any further instructions through this portion of the logic sequence but will repetitively continue to monitor the system in this manner. However, should the total processed quantity value drop below the total quantity desired value the cooking instruction transmission means 47 signals the cooking station monitor 12 to initiate a cooking instruction for the selected food items. Upon receipt of the cooking instruction, the cook inputs a commencement signal upon the cooking input 13 which is transmitted by the cooking initiated transmission means 48. The receipt of the cooking initiated transmission signal causes the total processed quantity decision means 49 to add the value within the number of items to cook registration means 38 with the value of the total processed quantity registration means 50. As such, the value of the number of items currently being processed decision and registration means 39 is updated.

The system also predicts future needs of the food items based upon the value within the total processed quantity registration means 50. This is accomplished by initiating the prediction commencement time decision means 44 which subtracts the value within the time to prepare registration means 43 from the time value within the desired quantity at a specific time registration means 32, the resulting value thereof being entered into the prediction commencement time registration means 46. If the current time is equal to or greater than this value the system then compares the value of the total processed quantity registration means 50 to the value of total quantity desired registration means 36 for the corresponding specific time registration means 32 which corresponds to the prediction commencement registration means 46. Should the value of the total processed quantity registration means 50 be equal to or greater than the total quantity desired registration means 36 the system will continue this protocol until the set conditions change. However, should the value of the total processed quantity registration means 36 be less than the value of the total quantity desired registration means 50 the cooking instruction transmission means 47 causes a cooking instruction to be displayed upon the cooking station monitor 12. Upon receipt of the cooking instruction and the actual commencement of the cooking process by the cook, the cook inputs a commencement signal upon the cooking input 13 which is entered by the cooking initiated transmission means 48. The receipt of the cooking signal causes the total processed quantity decision means 49 to add the value within the number of items to cook registration means 38 to the current value of the total processed quantity registration means 50. The value within the number of items currently being processed registration means 39 is updated by the value within the number of items to cook registration means 38 for that particular desired time interval.

In use, an example of the prediction commencement decision means 44 is as follows. At a current time of 11:20 a.m. the current time corresponds to a prediction commencement time registration means value of 11:20 a.m. for a hamburger. The system corresponds this time to the desired quantity at specific time means value of 11:30 a.m. This corresponds to a total quantity desired registration means value of eight hamburgers (value in total quantity desired registration means 36). The system compares this value to the present value within the total processed quantity registration means 50. If the total processed quantity registration value is below eight the system will initiate a cooking instruction through the cooking instruction transmission means 47. If this value is not below eight, the system will continue with a survey of other food items and times. It should be understood that as a precaution, the system does not update the number of items presently being cooked until an input has been received from the cooking station that the cooking process has actually been commenced through the cooking initiated transmitting and registration means 48.

As each food item is completely processed the cook initiates a finished input upon the cook's input 13 which is entered into the cooking complete decision and registration means 51. The system adds the value of the number of items to cook registration means 38 to the value of the quantity on hand decision and registration means 37 and subtracts the same value from the value within the number of items currently being processed decision and registration means 39. The entry of a discarded or wasted food item is added to the present value within the wasted food items registration means 42 by the wasted food items decision means 41, with the resultant value being stored within the wasted food items